

**AMENDMENT UNDER 37 C.F.R. 1.116**

**EXPEDITED PROCEDURE**

**EXAMINING GROUP 2124**

**PATENT**

**Application # 09/732,570**

**Attorney Docket # 1999P07535US04 (1009-064)**

**AMENDMENTS**

**AMENDMENTS TO THE CLAIMS**

1-51. (Cancelled)

52. (Currently Amended) A method comprising:

regarding an entire user control program stored in a first section of memory and executed by a programmable logic controller, while said entire user control program is executing and without significantly interfering with execution timing of said entire user control program, via a programmable logic controller operating system program:

displaying a section of said entire user control program indicated by a user to be debugged, said section of said entire user control comprising fewer instructions than said entire user control program;

compiling said section of said entire user control program to be debugged in a second section of memory;

without stopping execution of said entire user control program,  
automatically jumping to said another second section of said memory during real time execution of said entire user control program when an instruction indicated to be debugged is to be executed; and

capturing a status of said instruction as it is executed.

53. (Currently Amended) The method according to claim 52, further comprising:

via said programmable logic controller operating system program, the step of returning to

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~~said original compiled code of said program first section of memory~~ after said instruction indicated to be debugged is executed.

54. (Currently Amended) The method according to claim 53, further comprising:  
~~the step of via said programmable logic controller operating system program restoring said original compiled code removing said section of said entire user control program from said second section of memory~~ once said status is captured.

55. (Currently Amended) The method according to claim 52, further comprising:  
~~the step of via said programmable logic controller operating system program~~ instrumenting each instruction compiled in said ~~another second~~ section of memory.

56. (Currently Amended) The method according to claim 52, further comprising  
~~the step of via said programmable logic controller operating system program~~ storing a table relating instructions to boolean expressions, wherein said ~~instructions are section of said entire user control program~~ is debugged with said boolean expressions.

57. (Currently Amended) The method according to claim 52, further comprising:  
~~the step of via said programmable logic controller operating system program~~ providing a table of pointers to instructions of said ~~original compiled code entire user control program~~, wherein said instructions are located in memory during debugging.

58. (Currently Amended) The method according to claim 52, further comprising:

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~~the step of via said programmable logic controller operating system program, limiting a~~  
data size of each compiled instruction, wherein execution of said ~~instructions section of said~~  
~~entire user control program~~ to be debugged is faster and memory required to store said  
~~instructions section of said entire user control program~~ is reduced.

59-83. (Cancelled)

84. (Currently Amended) The method of claim 52, further comprising:

providing a table relating instructions to boolean expressions, wherein said section  
of said entire user control program is debugged utilizing said boolean expressions.

85. (Currently Amended) The method of claim 52, further comprising:

providing a table of pointers to instructions of said entire user control program.

86. (Currently Amended) The method of claim 52, further comprising:

providing a machine code instruction adapted to save a power flow status  
associated with said section of said entire user control program.

87. (Currently Amended) The method of claim 52, further comprising:

providing a machine code instruction adapted to save an operand value associated  
with said section of said entire user control program.

88. (Previously Presented) The method of claim 52, further comprising:

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comparing a scan count status word to a current value of a scan counter to determine that said status came from a single scan cycle.

89. (Previously Presented) The method of claim 52, further comprising:

copying a scan counter value to a scan count status word to determine that said status came from a single scan cycle.

90. (Currently Amended) The method of claim 52, further comprising:

comparing a scan count status word to a current value of a scan counter to determine that said status came from a single scan cycle;

clearing a flag in a buffer if said scan count status word is different from said current value of said scan counter.

91. (Currently Amended) The method of claim 52, further comprising:

acquiring results from an execution of said section of said entire user control program.

92. (Currently Amended) The method of claim 52, further comprising:

executing said section of said entire user control program.

93. (Currently Amended) The method of claim 52, further comprising:

displaying results from an execution of said section of said entire user control program on a human machine interface of said programmable logic controller.

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94. (Currently Amended) The method of claim 52, further comprising:

determining a status window size by a number of operand values returned from an execution of said section of said entire user control program, said status window adapted to display said status of said instruction.

95. (Currently Amended) A machine-readable medium having stored thereon a plurality of executable instructions, the plurality of instructions comprising instructions for:

regarding an entire user control program stored in a first section of memory and executed by a programmable logic controller, while said entire user control program is executing and without significantly interfering with execution timing of said entire user control program, via a programmable logic controller operating system program:

displaying a section of said entire user control program indicated by a user to be debugged, said section comprising fewer instructions than said entire user control program;

compiling said section of said entire user control program to be debugged in a second section of memory;

without stopping execution of said entire user control program, automatically jumping to said another second section of said memory during real time execution of said entire user control program when an instruction indicated to be debugged is to be executed; and

capturing a status of said instruction as it is executed.

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96. (Currently Amended) A circuit embodying a plurality of executable instructions, the plurality of instructions comprising instructions for:

regarding an entire user control program stored in a first section of memory and executed by a programmable logic controller, while said entire user control program is executing and without significantly interfering with execution timing of said entire user control program, via a programmable logic controller operating system program:

displaying a section of said entire user control program indicated by a user to be debugged, said section comprising fewer instructions than said entire user control program;

compiling said section of said entire user control program to be debugged in a second section of memory;

without stopping execution of said entire user control program,  
automatically jumping to said ~~another~~ second section of said memory during real time execution of said entire user control program when an instruction indicated to be debugged is to be executed; and

capturing a status of said instruction as it is executed.